TERRA

THE NATURAL HISTORY MUSEUM OF LOS ANGELES COUNTY
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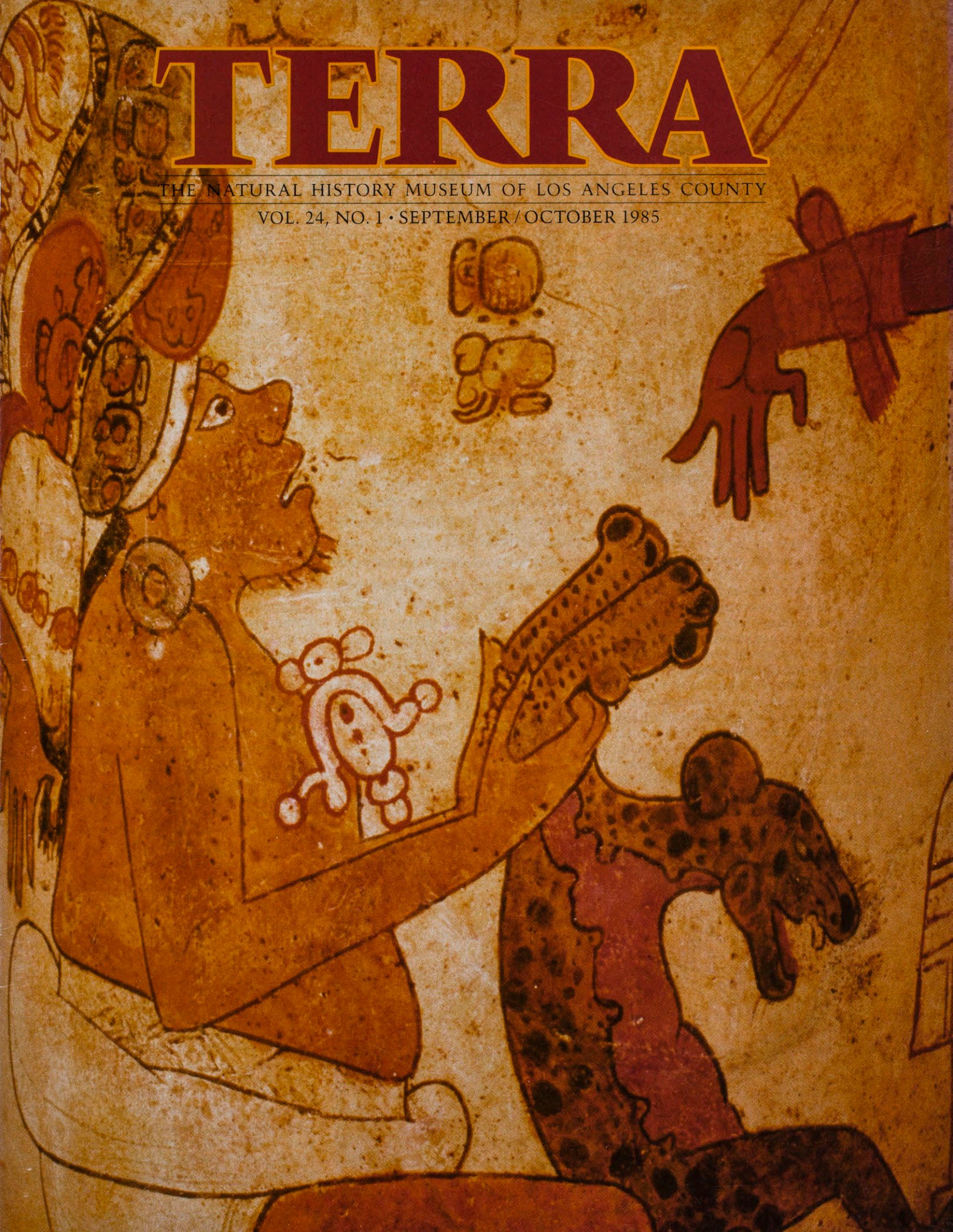
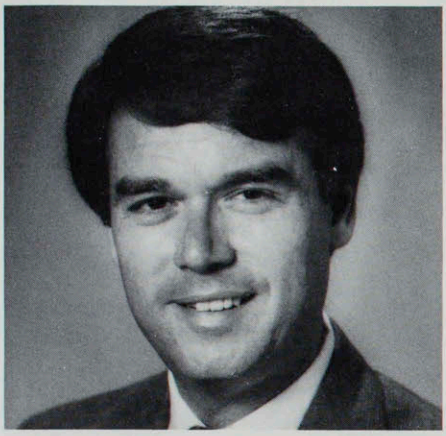


CURATORS & COLLECTIONS

NEW STAFF
PETER C. KELLER



Dr. Peter C. Keller has joined the Natural History Museum as Associate Director for Public Programs. In this newly created position Dr. Keller will be responsible for the museum's Exhibits, Education, Habitats, Publications, Marketing, and Special Events departments. Dr. Keller's plans for the museum's public programs include bringing in more exciting exhibits and more programs beneficial both to the people of Los Angeles as well as museum members. In addition to Maya—Treasures of an Ancient Civilization, Los Angelenos can look forward to exhibits on the recently salvaged *Mary Rose*, Henry VIII's lost warship; the amazing world of Dinosaur Art; and Hollywood, Legend to Reality, a survey of movie making's cultural influence on America and the world over the last seventy years.

A graduate of George Washington University, with his M.A. and Ph.D. from the University of Texas, Dr. Keller has worked at the Smithsonian Institution and has done extensive research in the Sierra Madre Occidental of western Mexico. He became Curator of Mineralogy at the Natural History Museum of Los Angeles County in 1976, supervised the building of the Hall of Gems and Minerals, and was co-producer and co-writer of a documentary film, "Gems of the Americas."

Following his tenure at the museum, Dr. Keller became Director of Education for the Gemological Institute of America, the largest educational institution for gemology in the world. While there he developed and implemented the GIA's academic policies and programs and revised the GIA's journal, *Gems & Gemology*, of which he is Associate Editor.

Most recently Dr. Keller was Project Manager for the development and installation of the museum's newest permanent hall, Gemstones and Their Origins, which explains the origin, occurrence, and exploitation of gem minerals (see *Terra*, May/June 1985).

EVER BEEN BITTEN BY A BOOBY?

Dr. Ralph W. Schreiber, Curator of Ornithology, is looking for volunteers to work in a tropical paradise handling seabirds. He needs people to spend a week or two

(Continued on page 31)

Dr. Ralph W. Schreiber, Curator of Ornithology, catches an adult Masked Booby (Sula dactylatra). *Dr. Schreiber is looking for field assistants to help him in his studies of breeding, mortality, site tenacity, and longevity in seabird species on Christmas Island.*

TERRA

THE MEMBERS' MAGAZINE
OF THE NATURAL HISTORY MUSEUM
OF LOS ANGELES COUNTY
AND THE PAGE MUSEUM
OF LA BREA DISCOVERIES

VOL. 24, NO. 1 • SEPTEMBER/OCTOBER 1985

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COVER

A detail from a painted cylindrical vase recovered — smashed — from a looter's trench in the Lost World Pyramid at Tikal, Guatemala. One of the masterpieces of Maya ceramics, this Late Classic vessel shows a baby jaguar being handed by one elite figure to another, whose hand is visible coming from the right side of the picture. National Museum of Archaeology, Guatemala City. Photograph by Diego Molina.

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MAYA

TREASURES OF AN ANCIENT CIVILIZATION

It is impossible to describe the interest with which I explored these ruins....The beauty of the sculpture, the solemn stillness of the woods disturbed only by the screaming of the monkeys and the chattering of parrots, the desolation of the city, and the mystery that hung over it, created an interest higher, if possible, than I had ever felt among the ruins of the Old World.

All was mystery, dark, impenetrable mystery.

by CHARLES GALLENKAMP

So wrote the American author-traveler John Lloyd Stephens during his explorations of the ruined Maya city of Copán in Honduras. It was, in fact, Stephens's celebrated book—*Incidents of Travel in Central America, Chiapas, and Yucatan* (1841), illustrated with lithographs by his companion Frederick Catherwood—that first brought the long-forgotten splendors of Maya civilization to widespread public attention. Since that time the aura of mystery that captivated Stephens's imagination has continued to cast its spell over scholars, explorers, and writers with an almost obsessive intensity. Indeed, in the annals of archaeology, few subjects have ever equaled the fascination exerted by the ancient Maya.

In a very real sense the Maya represent a "vanished civilization" whose once-thriving cities, brilliant intellectual accomplishments, and superb works of art lay buried for hundreds of years in the rain forests of southern Mexico and Central America. Not until the nineteenth century did these archaeological wonders begin to be investigated systematically, and as scholars learned more about Maya culture, they encountered a number of intriguing questions that are still not fully resolved.

Where and when did the Maya first appear in the area? What was the inspiration behind their remarkable achievements in astronomy, hieroglyphic writing, calendrics, architecture, and art? How did their sophisticated civilization evolve in one of the most inhospitable environments on the American continent—a vast expanse of lowlands plagued by heat, dense vegetation, and high rainfall? Why were most of their greatest cities abandoned between the ninth and eleventh centuries A.D., leaving temples, palaces, monuments, and residences to decay and crumble amid the ever-encroaching jungle? And what became of the inhabitants of these cities, some of which contained populations estimated at ten to fifty thousand people? At present an intensive effort utilizing the most advanced technology available to archaeologists is being focused on these and many other unanswered questions. Although we still lack definitive answers, new data are rapidly expanding our knowledge of Maya society. In no other area of the world can one better observe archaeology in action with such dramatic results.

The Maya inhabited an area of more than 125,000 square miles, encompassing what is now Guatemala, Belize, western Honduras, and the Yucatan Peninsula in Mexico. Recent discoveries have shown that some sections of this region were occupied as early as 2000 B.C. Agriculture first appeared during the Preclassic era (2000 B.C. to A.D. 250), as did the first ceramics, sculpture, hieroglyphic writing, and calendrics.

However, it was not until the Classic period (A.D. 250 to 800) that Maya culture reached its zenith—an era marked by the rise of sprawling cities, a complex sociopolitical organization, powerful ruling hierarchies, and extraordinary intellectual and artistic achievements. Major cities such as Tikal, Copán, Yaxchilán, Palenque, Cobá, Uxmal, and Chichén Itzá were filled with towering pyramids, temples, ornate palaces, shrines, and plazas. Many centers were connected by a network of paved causeways and roads, the outlines of which are plainly visible today.

Early in their history the Maya possessed a system of mathematics incorporating the zero (unknown in Europe until the Middle Ages). Astronomers charted the movements of the sun, moon, and Venus; they also worked out tables for predicting lunar eclipses and devised a highly accurate calendar based on precise measurements of the solar year.

Information of this kind was preserved in written records noted for the com-

(Continued on page 7)

Opposite page: This ceramic figurine in a tripod vase is an outstanding example of Early Classic cultural influences from Teotihuacán, central Mexico. The darker vase is typical of Early Classic Maya ceramics; the lighter colored figure belongs stylistically to Teotihuacán, some six hundred miles from Becán, Campeche, where the assemblage was found. Contained within the figurine were over forty smaller figures. Museum of Anthropology, Yucatan. Photograph by Stuart Rome.

The largest carved jade plaque ever found in the Maya area. This eight-inch-long Late Classic piece shows a seated lord on a throne embellished with the head of the Sun God. Beneath it is the Cauac Monster, which signifies the Underworld from which the sun emerges each day and to which it returns at night. Found in Altun Ha, Belize. Royal Ontario Museum. Photograph by Stuart Rome.

A gigantic, ruined head drawn by Frederick Catherwood in Copán, Honduras, in 1839.

THE MAYA REGION: Major Archaeological Sites

(Continued from page 3)

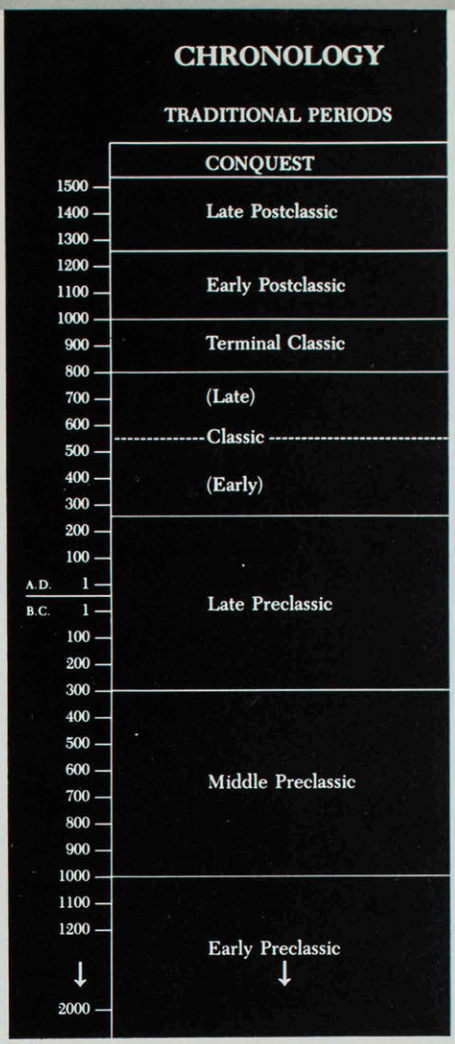
plexity of their glyphic symbols, which remain only partially deciphered despite continuing efforts by scholars to unlock their secrets.

Nowhere, however, was the brilliance of Maya civilization more evident than in its art. Renowned for their technical ingenuity and unique aesthetic concepts, Maya artisans depicted a wide variety of subjects ranging from images of haunting serenity to scenes of death, warfare, and human sacrifice. The polychrome ceramic vessels made during the Late Classic period (A.D. 550 to 800) rival the finest pottery ever produced in the ancient world, especially in the refinement of the figurative scenes with which they were decorated.

Even without metal tools, Maya sculptors executed superb creations ranging from gigantic stone monuments and architectural embellishments to exquisite bas-reliefs, jade ornaments, and figurines. The walls of temples and palaces were decorated with murals depicting a variety of subjects: elite rulers, gods, ceremonies, battles, stately processions, and scenes from courtly life. After centuries of exposure to moisture, perishable arts and crafts such as wood carvings, basketry, and textiles have disintegrated; but the few surviving examples, along with representations of these objects in painting and sculpture, leave no doubt that the Maya were also masters of these media. Indeed, this artistic tradition, as lavishly demonstrated by the exhibit Maya—Treasures of an Ancient Civilization, was characterized by a startling variety of materials and techniques, a curious mixture of reality and symbolism, and powerful images that delight the eye while drawing the viewer into an intriguing realm far removed from familiar European traditions.

Unfortunately, appreciation of the Maya tradition has led to the most serious problem facing archaeologists and government officials—the destruction and theft of priceless works of art caused by looters who carry on an illicit trade in antiquities at an alarming pace. Through this exhibit, it is hoped that public awareness of the scope and consequences of these activities will be heightened, helping to stem the flow of archaeological material out of the countries of origin.

Charles Gallenkamp, coordinator of Maya — Treasures of an Ancient Civilization, has conducted archaeological research in the southwestern United States, Canada, Mexico, and Central America under the auspices of various museums and foundations. He heads the team of specialists in Maya art and archaeology who have organized the exhibition.



The chronological divisions of Maya history. During the Preclassic period (2000 B.C. to A.D. 250) the Maya developed agriculture, began to settle permanently in cities and towns, and evolved their complex calendar and hieroglyphic writing. The hereditary ruling classes grew in importance. During the Classic period (A.D. 250 to 800) large cities in the southern portion of the Maya region, such as Tikal, Uaxactún, Yaxchilán, Piedras Negras, Seibal, Palenque, and Copán, flourished. In the Early Postclassic period (A.D. 1000 to 1250) some of these cities were totally abandoned, but Chichén Itzá, in northern Yucatan, became more prominent. Figure used with permission of the Albuquerque Museum.

The front of a stone idol from Copán, drawn by Frederick Catherwood, 1839.

This painted vase shows an elite figure smoking a cigarette, while tiptoeing away from two more important figures (not shown). From the Late Classic period, it may be the early work of the artist who created the jaguar vase shown on the cover. Found in a burial in Tikal, Guatemala. National Museum of Archaeology, Guatemala City. Photograph by Stuart Rome.

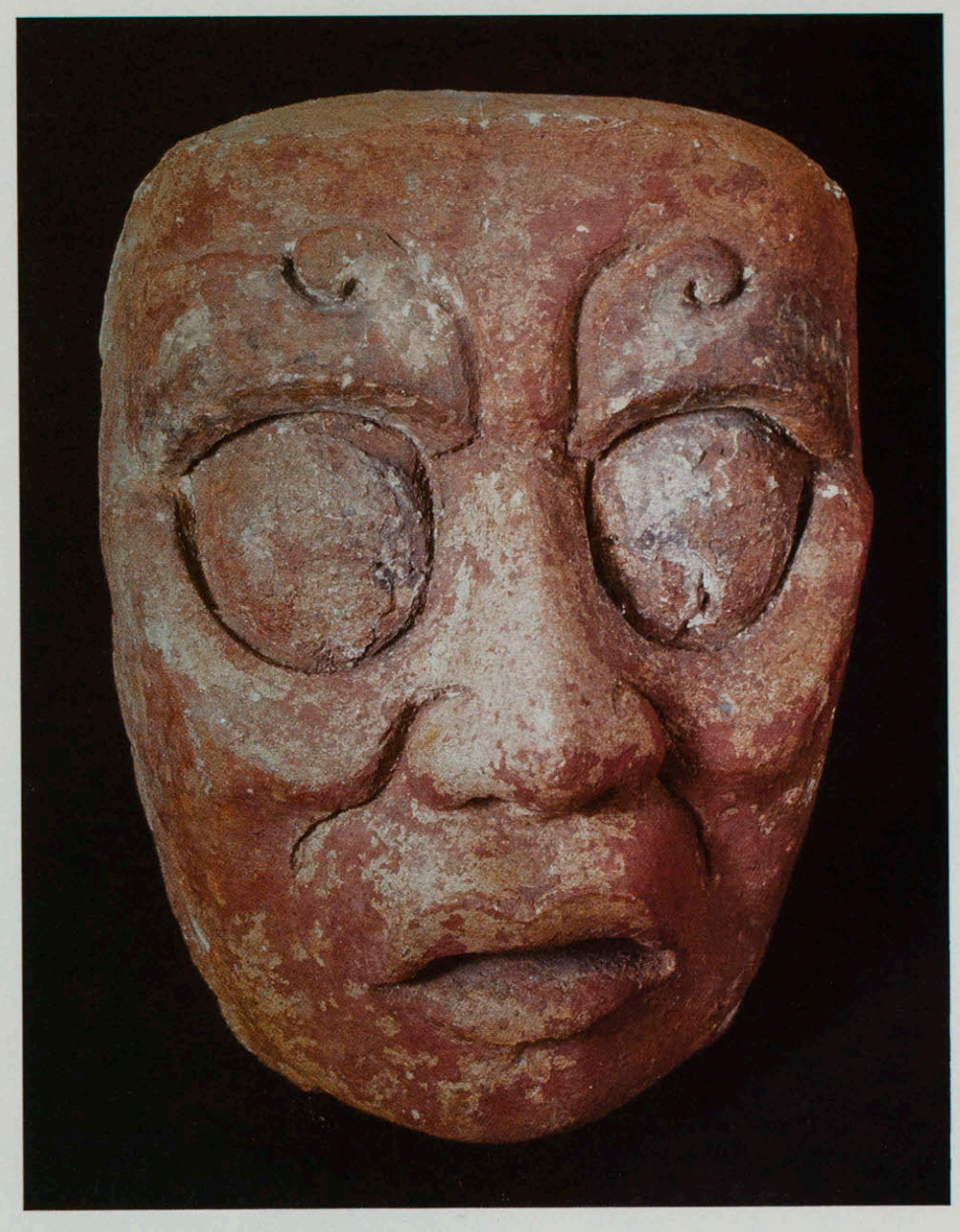
MAYA

■ Treasures of an ■ Ancient Civilization

This extraordinary presentation of Maya treasures, cosponsored by McKinsey & Company and the Natural History Museum of Los Angeles County, will be at the museum from September 7, 1985, through November 10, 1985. Special hours for this exhibit are Tuesday through Thursday, 10 a.m. to 5 p.m., Friday, 10 a.m. to 8 p.m., Saturday and Sunday, 10 a.m. to 6 p.m. The museum is closed on Mondays. Tickets will also admit holders to the museum; however, the museum itself will be keeping its customary hours from 10 a.m. to 5 p.m.

Museum members receive two free tickets. Additional tickets cost: adults, $4; children and senior citizens (62 or older), $.75; groups (arranged through museum) $3 weekdays, $3.50 weekends.

Tickets are available at the Membership Office of the Natural History Museum or through any Ticketmaster outlet (at all May Company and Music Plus stores; charge by phone by calling Ticketmaster at 213/480-3232, 714/740-2000, 619/232-0800, or 805/584-8700. There is a ticket handling charge). For further ticket information, call the Membership Office at 213/744-MAYA.



A stucco head representing the sun god, Kinich Ahau, from Palenque, Mexico. Dating from the Classic period, this head is unusual because of its asymmetrical nose and mouth, which give it a less stylized appearance than most Maya depictions of heads. National Museum of Archaeology, Mexico City. Photograph by Stuart Rome.

Ruins at Palenque, Chiapas, Mexico, drawn by Frederick Catherwood while on John Lloyd Stephens's 1839/1840 expedition to Central America. Said Stephens of Palenque: "Here were the remains of a cultivated, polished, and peculiar people who had passed through all the stages incident to the rise and fall of nations, had reached their golden age, and had perished, entirely unknown....Nothing ever impressed me more forcibly than the spectacle of this once great and lovely city, overturned, desolate, and lost; discovered by accident, overgrown with trees, it did not even have a name to distinguish it."

A two-part Early Classic incensario (an incense burner; the body separates at the waist, and the smoke from the burning copal resin issues from the mouth) in the form of the Old Fire God holding a human head. It was found at Tikal, Guatemala, in the tomb of a ruler that also contained the bodies of nine youths, a number of birds, and a crocodile that had been beheaded. National Museum of Archaeology, Guatemala City. Photograph by Stuart Rome.

A lidded ceramic urn recovered from an unidentified site. The designs, possibly representations of a celestial diety, were appliquéd after the clay had hardened, following which the lid was cut. Early Classic. Fundación Cultural Televisa, Mexico. Photograph by Stuart Rome.

This Early Classic ceramic incensario, found in a tomb at Uaxactún, Guatemala, may depict a pregnant woman. This state, coupled with the circle she forms with her thumbs, suggests the cycle of birth and death and implies the rebirth of the man in whose tomb the figurine was found. National Museum of Archaeology, Guatemala City. Photograph by Stuart Rome.

Late Postclassic gold necklace of jaguar heads and beads found in a tomb at Iximché, Guatemala. "Jaguar" was a title given to rulers in the Guatemalan highlands, which may indicate the noble status of the man in the tomb in which the necklace was found. National Museum of Archaeology, Guatemala City. Photograph by Stuart Rome.

Early Classic polychrome bowl with a knob in the form of a woman's head. Her knotted necklace and patterned huipil *(shawl) can be seen on the lid. Found in the Lost World Pyramid at Tikal, Guatemala. National Museum of Archaeology, Guatemala City. Photograph by Diego Molina.*

The painted, carved relief skulls are a fragment from Chichén Itzá, Yucatan, part of a longer panel covering the sides of a tzompantli*, or skull rack, which held the skulls of sacrificial victims. From the Early Postclassic era. Photograph by Stuart Rome.*

Late Classic polychrome plate showing a seated figure performing self-sacrifice; the black spots on and in front of the man are drops of blood. The orange-outlined form behind him is a perforator—examples of which have been found at Maya sites—used to puncture the skin for ritual blood-letting. Fundación Cultural Televisa, Mexico City. Photograph by Stuart Rome.

RARE PLANTS, ENDANGERED HABITATS:

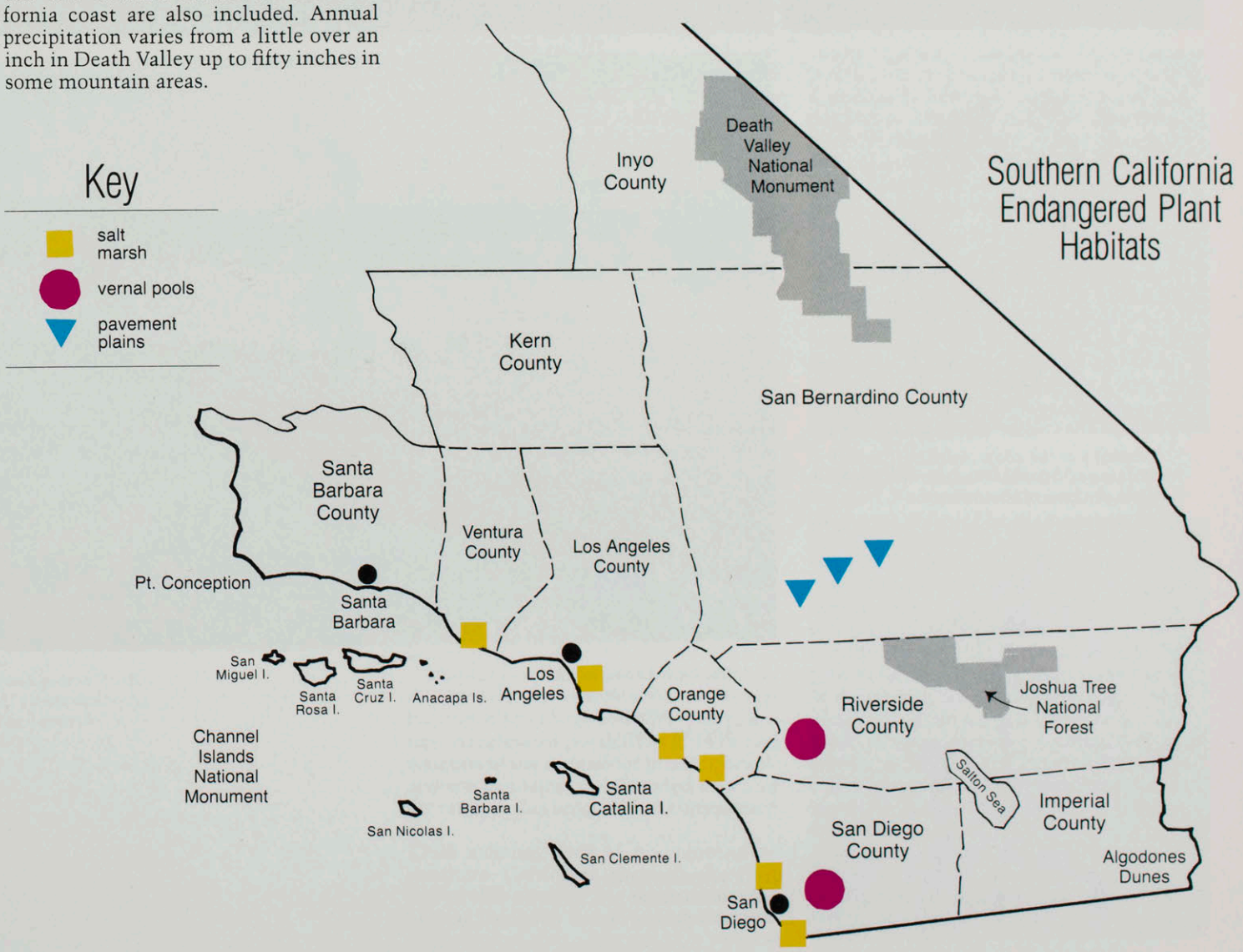
A Southern California Perspective

by ROBERT GUSTAFSON

Photographs by the Author

Southern California is blessed not only with a mild climate but also with a highly variable landscape featuring beaches, mountains, and deserts all within a few hours' drive from one another. Southern California is also blessed with an extremely interesting, highly diverse, and unique flora. Unfortunately, population pressures and their incumbent side effects are taking a toll of much of our natural heritage. No longer is it just a question of a plant or animal becoming threatened or extinct but, in many instances, whole ecosystems that encompass an entire array of organisms.

The southern California flora is a complex one by the very nature of its ecological zones, which range from sea level to 11,000 feet in the San Bernardino Mountains. The floristic province as defined by Philip Munz's *Southern California Flora* covers over 30,000 square miles ranging from Point Conception in Santa Barbara County, east and north across Kern County to the Inyo Mountains of Inyo County, and south to the Mexican border. The Channel Islands off the California coast are also included. Annual precipitation varies from a little over an inch in Death Valley up to fifty inches in some mountain areas.

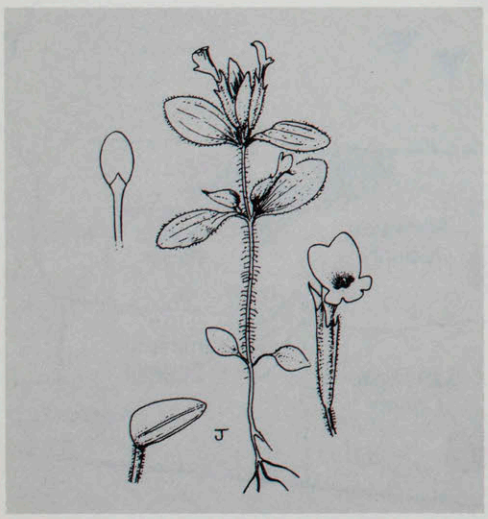


Orcuttia. *This unassuming plant is one of California's rarest grasses and is found in Riverside County's vernal pools.*

A vernal pool—a pool that appears temporarily following the rainy season—on Kearney Mesa, San Diego County. Accelerated urban growth and the use of the land for housing development has obliterated much of the range of the plant community associated with these pools.

A drawing of the coast cinquefoil, which disappeared from the Ballona Wetlands before the turn of the century.

The Ballona Wetlands, the last remaining salt marsh in Los Angeles County.



Trask's monkeyflower, a Catalina Island endemic last seen in 1904.

The aromatic San Diego mesamint is one of fifteen native California plants that are federally protected under the Endangered Species Act.

The salt marsh bird's-beak, an exceedingly rare salt marsh endemic.

Four habitats within southern California are endangered: the vernal (springtime) pools, salt marshes, pavement plains, and sand dunes. The Channel Islands and Death Valley, both geographical areas with many ecological habitats, also warrant discussion because their plant communities are very fragile.

Vernal pools occur throughout the state, but in southern California they are restricted to small areas in San Diego and southern Riverside counties. A vernal pool is a temporary pool—occurring in areas with a Mediterranean-type climate, as is the case with California—that forms when shallow depressions in the land are filled with standing water during the rainy season. These depressions retain water because of an impervious layer beneath the surface that does not allow the water to drain to lower levels of the soil. As the pools evaporate during the late spring and early summer months, several annual species flower, often in concentric rings of bright colors. This habitat can be compared to that of an island since the pools are well-defined, spatially separated, and high in endemic species (species that are native to a particular area).

Many of these vernal pool species are rare and endangered. The San Diego mesamint *(Pogogyne abramsii)* is one such plant that is accorded federal protection. This small, exceedingly aromatic member of the mint family can be quite colorful when it grows en masse, but it is usually smelled before it is seen. It occurs on Kearney Mesa, and the closely related *Pogogyne nudisucla* occurs on nearby Otay Mesa. Two other rare plants, Orcutt's brodiaea *(Brodiaea orcuttii)* and the San Diego coyote thistle *(Erynigium aristulatum* subspecies *parishii)*, grow in the pools in both counties.

Orcuttia, possibly the rarest genus of grasses in California, is represented by one of its five species on the Santa Rosa Plateau in southern Riverside County. This grass grows only in vernal pools that retain standing water into the late spring or early summer. *Orcuttia* is a rather small, sticky, aromatic grass that is one of the last of the spring flowers to bloom—usually when the pools have dried up.

Habitat destruction has been the chief reason that the vernal pools are disappearing in San Diego and Riverside counties. Accelerated population growth and concurrent use of land for housing development has simply obliterated much of the range of this unique plant community.

Salt marshes used to be common in southern California through the first half of this century, but so much of this habitat has been destroyed by development that only about 12,500 acres remain, one-quarter of the area originally covered by salt marshes prior to the arrival of the Europeans. What does remain, in many instances, has been so drastically altered that it is difficult to determine what the marshes were like in their pristine condition.

Currently, about thirty salt marshes can be found between the California-Mexico border and Point Conception in Santa Barbara County. The marshes themselves often differ greatly from one another, but the best preserved marshes occur in Point Mugu, Ventura County; Bolsa Chica, Orange County; and Mission Bay and the Tijuana Estuary in San Diego County. The only remaining salt marsh of any consequence in Los Angeles County, the Ballona Wetlands, is now the focus of a bitter environmental controversy. With the development of Marina del Rey and surrounding areas, what was once a fairly extensive lagoon has shrunk to a few hundred acres.

A cinquefoil *(Potentilla multijuga)*, a member of the rose family, once grew in the Ballona Marsh and apparently nowhere else. Since it has not been seen or collected since the advent of the twentieth century, it is presumed extinct. Another plant, a locoweed *(Astragalus pycnostachys* variety *lanosissimus)*, known only from the salt marshes of Los Angeles and Ventura counties, appears to have met the same fate as the cinquefoil. It was last seen in 1967, although there is the possibility this locoweed may still survive. The only officially recognized rare and endangered salt marsh plant currently extant is the salt marsh bird's-beak *(Cordylanthus maritimus* variety *maritimus)*, a hairy, partly parasitic member of the snapdragon family. Populations of this plant occur in San Diego, Orange, and Ventura counties and north to southern Oregon. Because of habitat destruction, this odd little annual has become exceedingly rare.

Located in the northeastern section of the San Bernardino Mountains are the pavement plains. The plains are more or less level sites a few acres in size characterized by reddish soils containing a high clay content; the flat surface covered with rock fragments looks like pavement. The areas are treeless but are often surrounded by Jeffrey pines or a piñon pine woodland. Perhaps a dozen of these sites occur in national forest lands, but many others are on private property. Because of the increasing urbanization of the Big Bear area and nearby Holcomb Valley, places where the pavement plains occur, the future of this critical habitat seems uncertain.

The flora of these areas includes over thirty species of plants, five of which are San Bernardino Mountain endemics and two that are unique to the plains them-

selves. A small, cushionlike buckwheat *(Erigonum kennedyi* subspecies *austromontanum)* and the Bear Valley sandwort *(Arenaria ursina)* are two plants that are restricted to the plains. Baldwin Lake linathus *(Linathus killipii),* silver-haired ivesia *(Ivesia argyrocoma),* and Parish's rock-cress *(Arabis parishii),* all considered rare and endangered, also occur here. Of these plants, only the *Ivesia* is found beyond the San Bernardino Mountains. As with the vernal pools, this concentration of rare plant species makes the pavement plains of utmost importance in terms of conservation.

Sand dune communities in southern California occur in Imperial County, near the Salton Sea, at Kelso, and in Death Valley. Many are threatened primarily by people riding off-road recreational vehicles. Nowhere is this more apparent than on the Algodones Dunes located in the extreme southeastern section of Imperial County.

The Algodones Dunes form a chain about ten miles long running in a more or less northerly direction. One of the most interesting features of these dunes is the intradunal flat, an oval-shaped area encircled by the dunes where the wind has blown away the sand down to the underlying gravel base. The flats are dynamic, moving up to an inch a year in a southeasterly direction.

The Algodones Dunes are home to a number of rare and endangered plants, some only occurring in California in this area. The giant Spanish needle *(Palafoxia arida* variety *gigantea)* is endemic to these dunes, but the plants are common locally. One of the great botanical curiosities of California is the sandfood *(Ammobroma sonorae),* so named because it was once an important food source for local Indians. This woolly parasite, which flowers in May, pushes its long scaly stems to the surface of the sand, where they expand into a hollow saucer-shaped receptacle studded with tiny blue flowers. Not easy to spot, it resembles a fuzzy pancake half-buried in the sand. The dune croton *(Croton wigginsii)* and the desert sunflower *(Helianthus niveus* subspecies *tephrodes)* also grow on the Algodones Dunes. Although not particularly rare, one of the world's smallest flowering dicots, *Pilostyles thurberi,* may be found parasitizing dye-weed *(Dalea emoryi),* a member of the pea family. Its vegetative parts have been reduced to webby filaments that penetrate the dye-weed so only the tiny flowers and their bracts are visible. The pinhead-size flowers look like scale insects infesting the stems of the host plant. This unusual plant ranges into Arizona, New Mexico, and Mexico, wherever its host plant occurs, but it is seldom seen. There are other rare plants

The pavement plains, a unique plant community found in the San Bernardino Mountains, are now threatened by the growth of the Big Bear and neighboring Holcomb Valley areas.

Sand dunes at Death Valley. This unique ecosystem is threatened primarily by off-road and recreational vehicles in other areas of the state.

Silver-haired ivesia, a pavement plains species from the San Bernardino Mountains.

Sandfood. Off-road vehicles threaten this plant on the Algodones Dunes.

Panamint daisy, a spectacular plant endemic to the Panamint Mountains.

that grow on the Algodones Dunes, but the devastating effects of off-road vehicles pose a very real threat to their continued survival.

The Channel Islands off the coast of southern California are a veritable hothouse of rare and endangered biota. The human factor and the catastrophic aftermath of introduced grazing mammals, such as sheep and goats, have had a profound effect and, in some instances, brought about irreversible ecological consequences.

San Clemente Island, still used by the Navy for target practice, is currently in the limelight because of the controversy over the extirpation of the goats that have reduced some plant species, unique to this island, to the point of extinction. Four of this island's endemic plant species are federally protected.

Rabbits have wreaked havoc on the vegetation already devastated by goats and sheep on tiny Santa Barbara Island, the smallest in the Channel Islands group at one square mile. Thought to be extinct until it was rediscovered in 1975, Trask's live-forever *(Dudleya traskiae)* struggles for survival against nearly impossible odds. Even though there are now fewer rabbits, their mere presence still forbodes disaster for the island's unique plants.

On Santa Catalina Island, goats, sheep, and feral pigs have taken their toll. The introduction of goats in the nineteenth century resulted in wholesale destruction of vegetation on Catalina, undoubtedly eliminating many species. Catalina monkeyflower *(Mimulus traskiae)* and boxthorn *(Lycium hassei)* were endemic to this island and are presumed extinct. The monkeyflower has not been seen since 1904; the last known boxthorn died in 1938.

Two endemics from Santa Cruz Island, the Santa Cruz Island monkeyflower *(Mimulus brandgei)* and rock-cress *(Sibara filifolia)*, have also disappeared. In terms of extinctions and habitat loss, the islands have all fared poorly over the last hundred years.

A few of the islands' rare plants have demonstrated horticultural possibilities and are finding their way into the garden and landscape trade. Catalina ironwood *(Lyonothamnus floribundus)* and Malva rosa *(Lavatera assurgentiflora)* have long been in cultivation. The Catalina ironwood is a handsome, stately tree with glossy, bicolored leaves. Although it is now restricted to southern California's offshore islands, fossil evidence shows that it once grew on the mainland in such places as Death Valley some 50 million years ago. Malva rosa is commonly planted along the coast for its showy red-purple flowers. The island form of the tree poppy *(Dendromecon rigida* subspecies *harfordii)* is showier

A view of Anacapa Island, one of the Channel Islands off the coast of southern California. These islands collectively are home to many rare and endangered plants. Several endemic plant species have been reduced to the point of extinction following the introduction of grazing animals such as sheep and goats.

Trask's life-forever, presumed extinct until rediscovered on Santa Barbara Island in the 1970s.

than its mainland counterpart and desirable for native gardens. The island snapdragon *(Galvesia speciosa)*, an attractive three-foot shrub with inch-long lipstick-red flowers, and island alumroot *(Heuchera maxima)* also show promise as low landscaping plants. But all these are exceptions rather than the rule when it comes to perpetuation of rare species. Most endangered plants simply do not catch the eye of the horticulturist.

Finally, let us look at the Death Valley National Monument, which falls floristically into the southern California province. The dramatic climatic and geological features have produced a seemingly barren but serenely beautiful landscape. A number of rare plants, endemic to the monument, grow in such inhospitable terrain that a few are well worthy of mention.

On the stark, barren badlands near Artist's Drive, one of the most desolate places anywhere in California, the dainty matlike annual known as golden carpet *(Gilmania luteola)* can be found. It derives its common name from its tiny yellow flowers and yellow-green leaves. One of the most curious aspects of this plant is that it only appears in wet years when several consecutive rainstorms generate enough moisture for the seeds to germinate. Although a few individuals may be seen in dry years, these plants usually perish before setting seed. Chemical inhibitors in the seeds prevent germination when insufficient rain or snow falls during the winter. On the sheer rockwalls of Titus Canyon in the Grapevine Mountains, rocklady *(Maurandya petrophila)* holds onto a precarious existence. Few people have seen this little pendent perennial nestled into the limestone crevices partly because of its inaccessibility and partly because the population is so extremely small.

Death Valley sage *(Salvia funerea)* is a most attractive shrub totally confined to the park, where it may be found growing here and there in dry washes or at the base of rocky canyon walls. The deep-blue-violet flowers, which appear in the spring, offer a vivid contrast to the dense, white, woolly foliage. Perhaps the most magnificent plant in the monument, and, unfortunately, one of the rarest, is the Panamint daisy *(Enceliopsis covillei)*, which is restricted to a few canyon slopes and washes in the Panamint Mountains. With its basal rosette of silvery leaves and large yellow flowers held high above the foliage, this daisy has to be among the most spectacular wildflowers in the state. Even though protected in the park, wild burros are a threat to its existence.

Under national park protection the rare plants of Death Valley and the Channel Islands will continue to survive. But for the plants of the vernal pools, pavement plains, sand dunes, and salt marshes, the future is not bright. The adverse effects of off-road vehicles, urban sprawl, destructive herbivores, and even natural disasters can make a profound impact on these fragile ecosystems. Fortunately, the Endangered Species Act has set the tone for the protection of jeopardized fauna and flora. To date, however, only fifteen California plants enjoy federal protection, although that in itself does not ensure they will be out of harm's way.

The Inventory of Rare and Endangered Vascular Plants of California prepared by the California Native Plant Society (CNPS) indicates that slightly more than 25 percent of our flora needs protection. It is only when the public begins to realize that short-term gains ultimately lead to long-term disasters that any major steps for plant conservation will be taken. Fortunately, the combined efforts of CNPS and Nature Conservancy, to mention only two organizations, have begun to set the course. Our greatest heritage, America's wildlife and wildlands, is on the line.

Robert Gustafson, Collections Manager in Botany, has had a long-standing interest in rare and endangered plants not only in California but also the Hawaiian Islands. He is one of the project coordinators for the museum's new chaparral ecology hall.

Times of Trade

With Times of Trade the Natural History Museum inaugurates its new exhibit space on the main floor of the 400 South Hope Street Building. The exhibit will remain in the main lobby through the end of October, and the space will subsequently house a series of Natural History Museum exhibits that draw upon the museum's diverse collections.

Times of Trade illustrates the contributions that trading between cultures made to Native American arts of past generations. Today we appreciate these beautiful pieces as expressions of the cultural values of those who made them. In emphasizing this aspect of American Indian art, we ignore the economic and historical forces that made the art possible. Much of the florescence of indigenous North American art was made possible by the existence of materials and consumers from other societies. The exhibit focuses on three times of trade involving different Native American cultures: the early nineteenth-century Navajo, the late nineteenth-century Sioux, and early twentieth-century California and Great Basin tribes.

Lobby of 400 South Hope Street Building with cases designed by the Natural History Museum Exhibitions Division. Photograph by John De Leon.

"Chief style" Navajo blanket. This early nineteenth-century style is characterized by its restrained use of black, white, and indigo-blue stripes. Photograph by Dick Meier and John De Leon.

The Swiss artist, Karl Bodmer, accompanied the German explorer Prince Maximilian zu Weid on his five-thousand-mile odyssey up the Missouri River. His 1833 drawing depicts a Piegan-Blackfoot man named Kiasax proudly wearing one of the earliest Navajo chief style blankets draped over his shoulder.

Navajo textiles were greatly prized by members of adjacent and distant tribes, who acquired them through trade. "Chief style" blankets, such as the early nineteenth-century blanket on exhibit and shown on page 21, were especially popular with the Indians of the Great Plains. Historical records, which include the drawings of early explorers such as Bodmer as well as documentation by later photographers, show Plains Indians wearing these distinctively striped blankets. The term "chief blanket" is misleading, for there is no evidence that possession of these textiles was restricted to those who were Navajo political leaders. Rather, the blankets were rare and valuable goods, carried to the Plains over lengthy trade routes. Once on the Plains, their purchase and use would have been limited to persons of some wealth and achievement.

The late nineteenth-century Sioux cradle in the exhibit represents one type of cradle used in the Plains area. Well-designed for the mobile Plains lifestyle, the cradle could be worn on the back or hung from a pack saddle or tipi pole. The backboard and high curved section of the carrier provided extra protection for the infant's head in the event the cradle was thrown from a horse or dropped. A cradle usually consisted of buffalo hide attached to wooden supports. As trade items, including calico cloth, bells, glass beads, and brass studs, became available from East Coast and European sources, they were enthusiastically accepted and incorporated into traditional material culture.

Dr. and Mrs. John S. MacQueen lived in Bishop in the late nineteenth and early twentieth centuries. They collected baskets from the local Owens Valley Paiute as well as from other California and Great Basin tribes. According to family tradition, Dr. MacQueen's collection grew in part because he was willing to accept baskets for dental work. The family's collections included traditional, made-for-use forms as well as made-for-sale pieces. The small handled seed beater, which doubled as a pine nut scoop, is an example of a traditional Owens Valley form. The small coiled basket decorated with horses illustrates the incorporation of figurative designs into commercial baskets. In their collection the MacQueens captured turn-of-the-century developments in Native American basketry of their area.

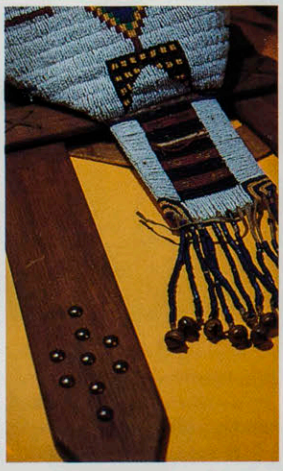
Margaret Ann Hardin,
Associate Curator
Nancy Blomberg,
Assistant Curator
Nancy S. Jackson,
Curatorial Assistant
Anthropology Section

Six of the approximately four dozen baskets collected by Dr. and Mrs. John S. MacQueen, who lived in Bishop around the turn of the century. The three baskets on the left depart from tradition in size, shape, and decoration. By contrast, the three pieces on the right are traditional in both form and use. The background shows some of the exhibit's baskets as they were displayed in the MacQueen living room in Bishop. Photograph by Dick Meier.

Sioux lattice cradle made in the late nineteenth century. The cradle cover consists of buffalo hide decorated with calico, bells, and several kinds of beads. The pointed stick framework is not original to the carrier. Cradle photographs by Susan Gipson.

By the mid-nineteenth century, glass seed beads, manufactured in Italy and Czechoslovakia, were a popular trade item. Although each tribe had characteristic color preferences, plain black, blue, and white beads and a red bead with a white interior had continued popularity throughout the Plains. Metal faceted beads were introduced to the Sioux during the 1880s.

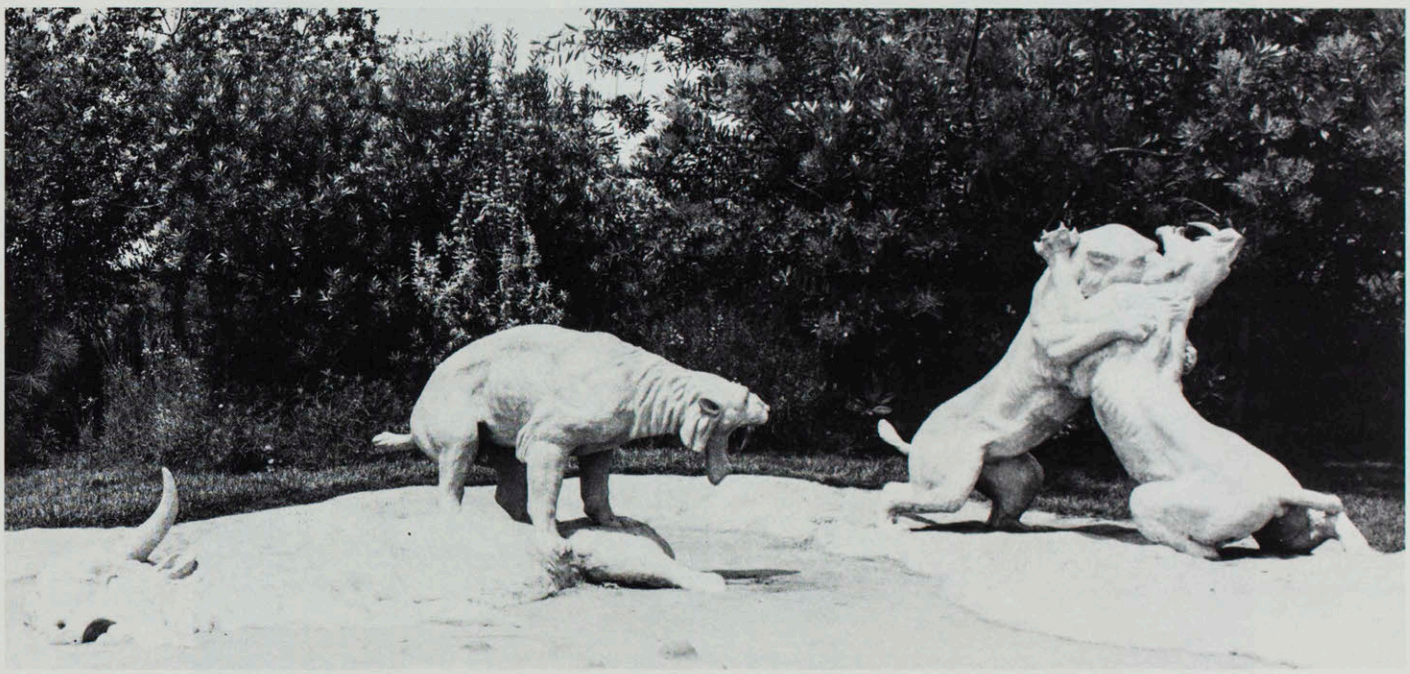
Tubular or bugle beads appeared on the northern and central Plains about 1870. The small seed beads are attached with a "lazy stitch." In this technique many beads are strung before an anchoring stitch is taken.



The cradle maker attached bells and bead chains for decoration.

THEY LIVE AGAIN

SIXTY YEARS OF SCULPTURE IN HANCOCK PARK



Hermann T. Beck created the sculptures on this page and on pages 24 through 26. Kentucky sculptor Joseph L. Roop assisted Beck on the fighting saber-toothed cats sculpted in 1934. The half-submerged bison and the cat atop it disappeared during the 1950s and are still missing today.

by ERIC SCOTT

Hancock Park is the site of the famous Rancho La Brea Tar Pits, the richest deposits of terrestrial Ice Age fossils in the world. Today the park borders Wilshire Boulevard in the Miracle Mile district of the City of Los Angeles, a splash of green surrounded by busy streets and harsh gray skyscrapers.

Over thirty thousand years ago this area was part of a vast, teeming wilderness. Fierce dire wolves hunted in packs alongside huge mammoths, hulking mastodons, and massive, ungainly ground sloths. Tiny pronghorn antelopes browsed for food, lions lazed in the cool green shade, and hungry saber-toothed cats prowled stealthily. Giant teratorns, great condorlike birds, soared overhead or hunted small game on foot, while towering bears roamed and hunted wherever they pleased.

All these animals once lived in the area around Hancock Park; many of them also died there, trapped in sticky seeps of asphalt. Today the bones of these animals are all that remain, mute testimony to the past, buried in asphalt deposits along with plants, insects, and shells. These fossils tell a paleontologist much about form and function, and mounted skeletons show the professional and layperson alike a rough outline of the size and shape of these extinct beasts. But the bones are not the entire animal; they tell us little of the color of the mammoth, the confident power of the short-faced bear, or the silken poise of the saber-toothed cat on the hunt. These are lost, mired in a past more than three

The cast stone lions (1935). Photograph by Lewis Athon.

hundred centuries old.

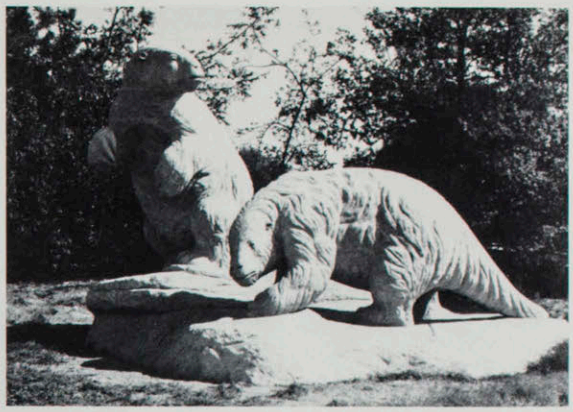
For the past six decades, however, sculptors have been endeavoring to bring these animals back to life. Today more than bones and tar can be found in Hancock Park, and visitors who stroll beneath the shady trees can see how the extinct animals might have appeared more than thirty thousand years ago.

Possibly the earliest sculpture of an animal from Rancho La Brea, and likely the oldest surviving piece, is that of the pronghorn antelope, a small animal about the size of a collie. This life-size replica was created by William Otto for the Los Angeles County Museum's Hancock Hall, a former exhibit hall devoted to fossils from Rancho La Brea. Unfortunately, no sure date for completion of the statue is known at present; the figure could have been sculpted any time between 1923 and 1946.

The first sculptures intended for Hancock Park were made by Hermann T. Beck, a taxidermist and sculptor, and Joseph L. Roop, a famous sculptor from Kentucky. Beck and Roop were granted money by the Work Projects Administration (WPA) to create life-size replicas of the extinct animals; the sculptures were modeled in clay at Beck's taxidermy shop, then molded in plaster. The plaster molds were transported to Hancock Park and the statues were cast in a special high-durability cement, "ornamental cast stone." Beck had originally wished to use bronze, but this would have proved too costly.

Four sculpture groups were completed in all: three saber-toothed cats fighting over a bison carcass (finished in 1934), two lean and powerful lions (1935), a short-faced bear sitting comfortably on a boulder (1936), and two ground sloths feeding (1938). Of these, Roop collaborated with Beck only on the fighting saber-toothed cats. Beck and Roop also worked together on a plaster dire wolf reproduction, completed in 1941; however, this statue was never intended for Hancock Park. Instead, it was installed in the L.A. County Museum's Hancock Hall, where William Otto's pronghorn antelope had probably been displayed some time earlier.

The work was done to exacting specifications. Beck worked closely with Henry A. Wylde, then Chief Curator of Exhibits at the County Museum, to get up-to-date descriptions of how the animals might



The giant ground sloths (1938).

Landscaping of the west end of Hancock Park caused the stone animals to be moved to new locations around the Lake Pit. Notice the shattered pieces of the sloth's base lying near the bottom of the picture. Photograph by Lewis Athon.

The short-faced bear (1936). Most of the boulders at the base of the statue are no longer there.

once have appeared. Beck borrowed fossil bones from the museum to measure and, in some cases, to construct the interior armature of the clay originals, thus ensuring the accuracy of the life-size replicas.

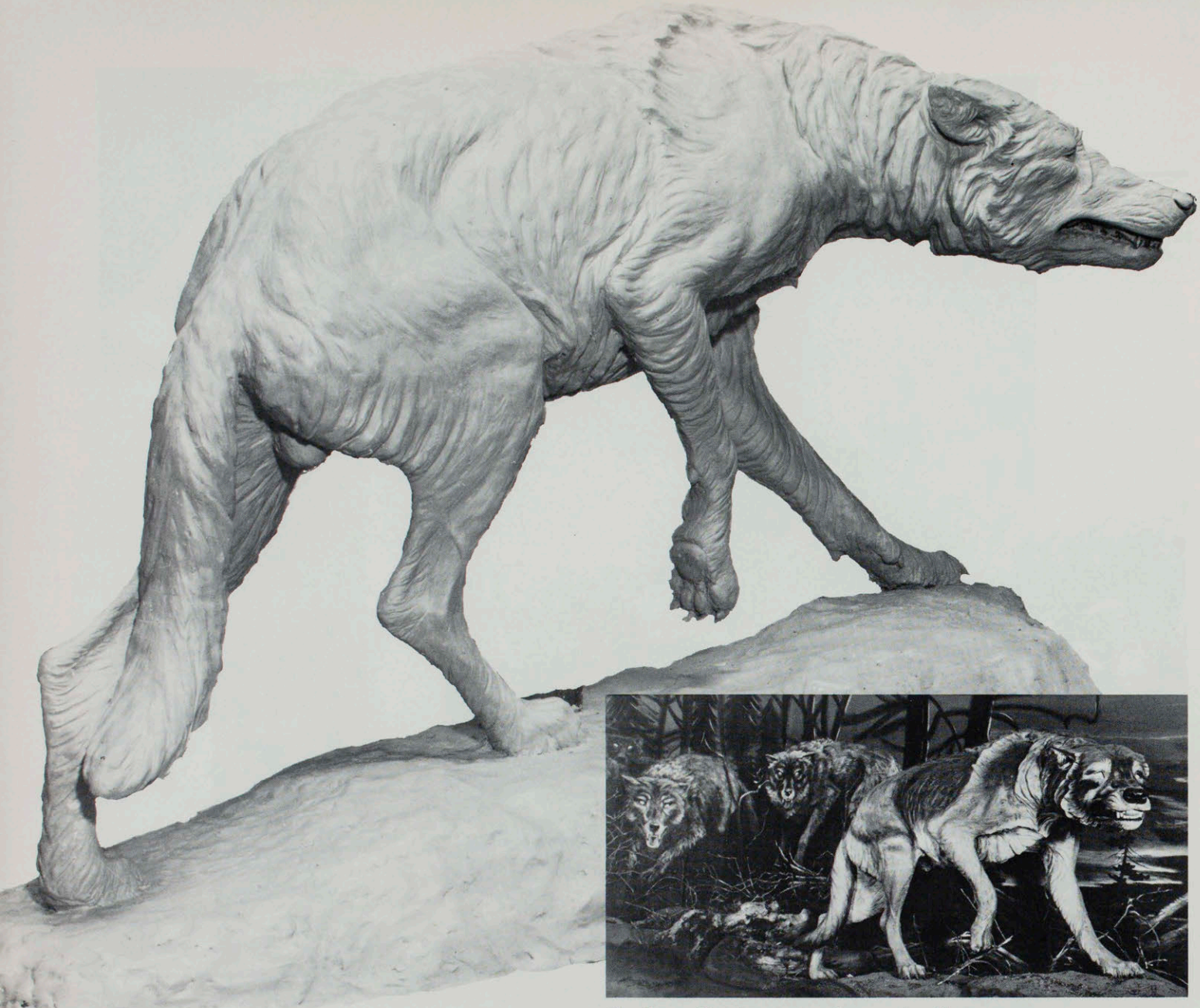
By mid-1938 all the sculptures destined for Hancock Park were in place. The public response to the stone animals was positive, spurring subsequent plans to commission more replicas for the park and create again a wilderness of wild animals—only this time, animals of stone rather than flesh. However, the intervention of World War II stifled any enthusiasm for the project, and the plans bore no fruit.

The stone figures were left to themselves while urban Los Angeles rose around Hancock Park. Unfortunately, vandalism was a problem in Los Angeles even then, and the unprotected sculptures made prime targets. For example, in 1949 vandals bombarded the short-faced bear with gooey balls of tar. Oddly enough, when informed of this by the Park Supervisor, the Curator of Paleontology at that time sent this caustic reply: "let's not monkey around... trying to make him more attractive. As it is, we are sick of looking at his puss. So let's not do anything to him and some day he will silently pass out into the smog." The curator has since passed away; the bear statue is still with us.

In 1951, due to extensive landscaping of the western half of Hancock Park, the animal replicas were moved to new locations around the Lake Pit fronting Wilshire Boulevard. Again there was talk of turning Hancock Park into a kind of Pleistocene playground with authentic Ice Age plants and more stone animals. Some trees and shrubs were indeed brought in, but no new statuary was to be added for more than a decade.

By this time the half-submerged bison carcass and the saber-tooth atop it had disappeared. No one today has any idea where these stone replicas might be found, if they still exist.

In the mid-1960s sculptor Howard Ball was awarded a grant from Museum Board Chairman William T. Sesnon to sculpt some new animals for Hancock Park. These new animals were to be made of fiber glass, a medium far superior for showing every detail than the cast ornamental stone used by Beck. Ball was very experienced in this sort of work, having



The dire wolf as it appears today, repainted by Jerome and Elma Connolly. Photograph by Dick Meier.

sculpted a three-story-high *Brontosaurus* for the New York World's Fair. He also created several replicas for the ever-popular Primeval World at Disneyland, where brontosaurs dine in a swamp while *Triceratops* eggs hatch nearby and a two-story-high *Tyrannosaurus rex* battles a *Stegosaurus* to the death.

By 1968, thirty years after the completion of Beck and Roop's work at Hancock Park, Howard Ball's statues were in place around the Lake Pit. Where the earlier sculptors had displayed either fierce action (the fighting saber-toothed cats) or quieter moments (the lions, sloths, and bear), Ball chose to show poignancy. On the shore of the Lake Pit a baby mammoth stands next to its father and calls forlornly to its mother, who is mired in the lake. The mother is trumpeting in alarm—with good reason! On the far side of the lake a mastodon also calls from a small grassy island about twenty feet out from shore, poised with one leg raised and trunk held high.

Ball was also commissioned by the Miracle Mile Soroptomist Club to sculpt a family of saber-toothed cats. This sculpture depicted, not killer beasts locked in mortal combat, but a mother cat lying on the shore of the Lake Pit, her teats exposed for nursing, while her two cubs romped nearby. A male and female stood on the other end of the Lake Pit near the mammoth family, looking hungrily at the trapped mother mammoth.

Ball had also sculpted a life-size teratorn for the lake pit. The giant scavenger had been placed in a tree near the mammoth family, but it was stolen on the same day it was installed—even before its unveiling! This figure is missing to this day.

To make room for these new sculptures, the older statues had to be moved again. The bear was returned to its original location, the lions were dragged inside the Pit 91 compound, and the fighting saber-toothed cats were relocated within the fence around Pits 61 and 67. The sloths were installed next to the Observation Pit.

By this time the cast stone figures were definitely showing their age. The sloths and the bear were still in good condition, but the spines of the lions had split open to reveal reinforcing bars that were starting to rust away at an alarming rate. The fighting saber-toothed cats were in terrible shape: a vandal, hoping to take

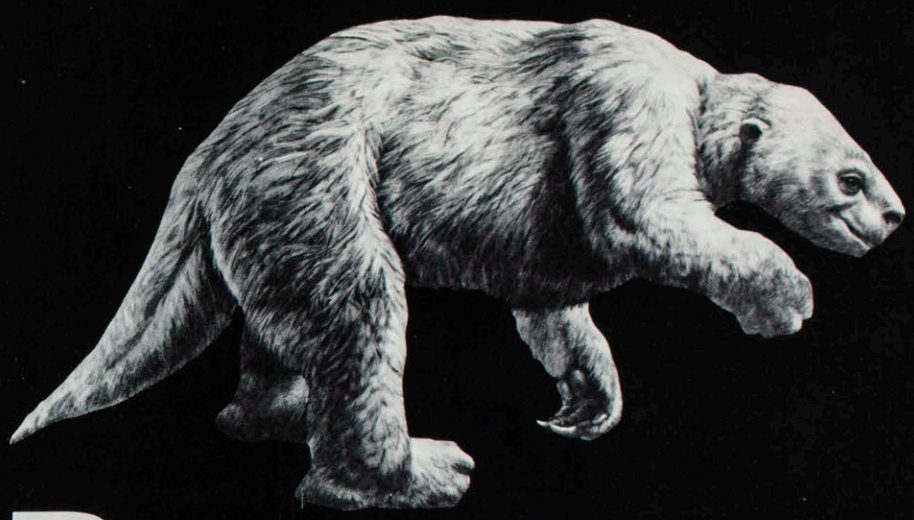
The plaster dire wolf (1941) of Beck and Roop. This sculpture was not created for Hancock Park, but was part of the Natural History Museum's Hancock Hall.

home a souvenir, had wrenched the exposed sabers free from one of the cats—and had broken away half the animal's stone head as well. The same cat's extended claws had worn away, and its tail had crumbled to expose the metal bars within.

The public success of Ball's fiber glass animals apparently overshadowed the poor condition of the older statuary, for new plans were made in 1969 to populate Hancock Park with life-size restorations of the extinct beasts sculpted by Ball. Unfortunately, during this same time more vandalism occurred: the fiber glass sabers and tails of Ball's saber-toothed cats near the mammoth family were sawed off and stolen. This incident, combined with the earlier theft of the giant teratorn, discouraged possible donors; no new donations were forthcoming, and the idea to commssion more reproductions faded yet again. Other problems arose: in 1970 the fiber glass mother saber-toothed cat and one of her kittens were stolen from their spot at the west end of the Lake Pit. They were recovered eventually but were not put back on display. The cats located near the mammoth family were also removed from view. Only one replica, a saber-toothed kitten, remained on display in the early Rancho La Brea Project chalet laboratory as the original "Kitty" at the donation plate.

Aside from a paint job for the bear and the sloths in 1974, nothing more was done for the statues until after 1975, when construction began on the George C. Page Museum of La Brea Discoveries. Howard Ball's saber-toothed cat family was put back on display when the new museum opened in 1977; visitors found the sculptures in a new exhibit, cleaned and repainted by freelance artists Jerome and Elma Connolly. Curiously, the mother and her kittens were accompanied by a male cat standing behind them. This male had once been the female figure standing near the mammoth family at the Lake Pit—male genitalia had been added to the sculpture! The original male is installed in a different exhibit, where it alternates visually from the sculpted animal to a skeleton and back every few seconds. This remains one of the most popular displays in the museum.

Another Page Museum exhibit brought an older sculpture back into the public

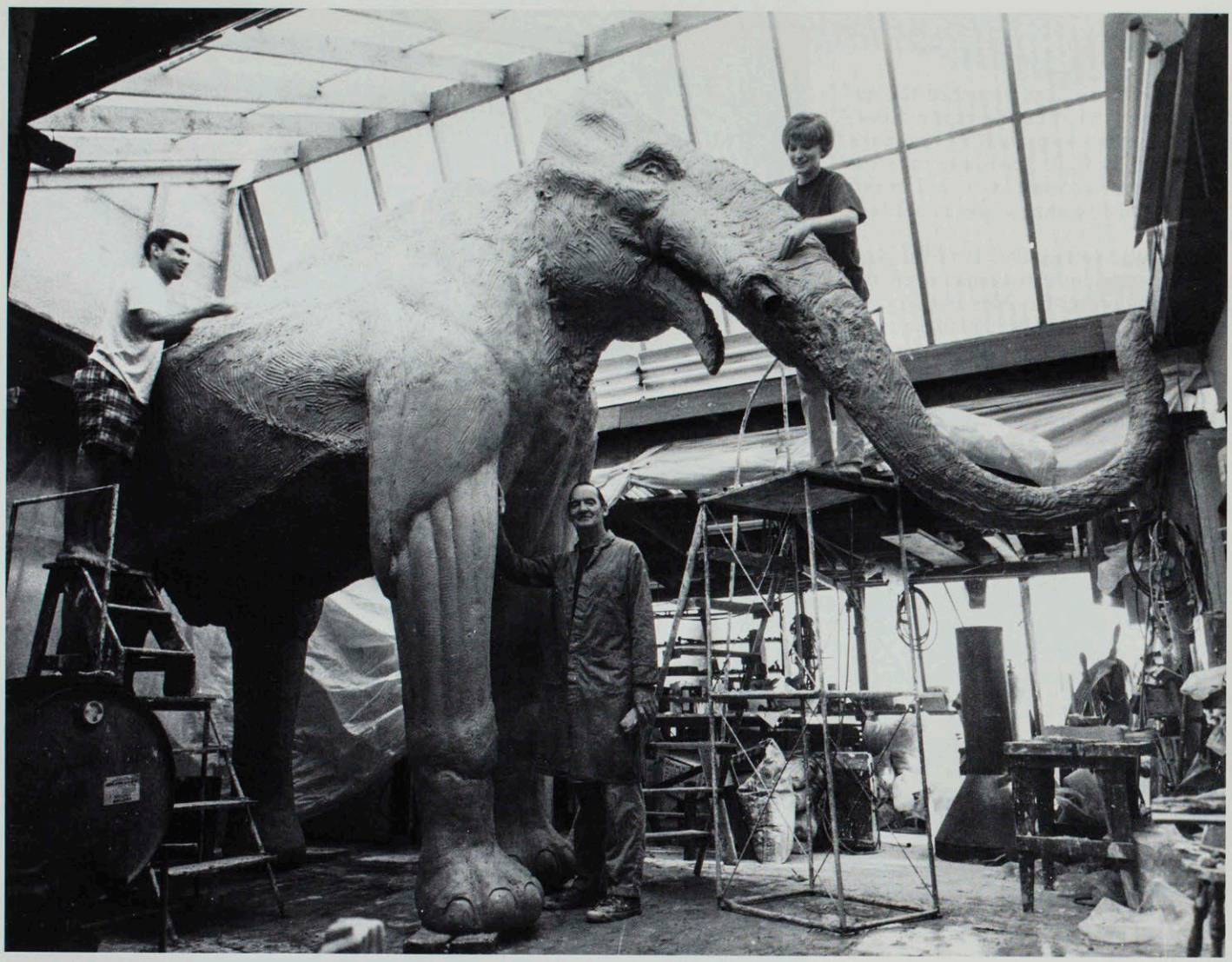


DON'T BE SLOTHFUL... MOVE UP!

Rancho La Brea: Treasures of the Tar Pits, prepared by curators from the Natural History Museum of Los Angeles County and the George C. Page Museum of La Brea Discoveries, is fresh off the presses. **Contributing museum members ($50) or those in higher categories automatically receive a copy of this colorfully illustrated and informative book absolutely free as a benefit.**

If you are already a Contributing member, you will receive a copy of Rancho La Brea: Treasures of the Tar Pits within six to eight weeks. **If you are not a Contributing member, why not upgrade your Individual or Family membership to the Contributing member level now?** Not only will you receive this up-to-the-minute and very readable account of how the tar pits were formed and how a wide variety of Ice Age plants and animals were trapped in the gooey asphalt (and make a closer acquaintance of Harlan's ground sloth, Glossotherium harlani, pictured here), but you will be sent a special publication each year that you continue to support the museum at this level. And you will continue to enjoy all the other benefits—unlimited free admission to both museums, a subscription to Terra, a 10 percent discount at all four museum shops, and invitations to special members-only events—that make belonging to Los Angeles's two great museums so worthwhile. To upgrade your Individual or Family membership and reserve your copy of Rancho La Brea: Treasures of theTar Pits, please call the Membership Office at 213/744-3426.

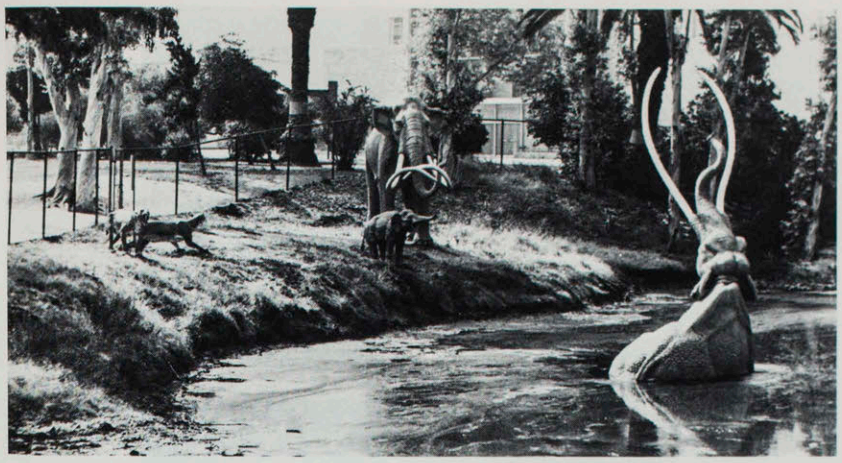
Howard Ball in his workshop with two assistants and the unfinished fiber glass mammoth. Photograph by Larry Reynolds.



eye: the plaster dire wolf of Joseph Roop and Hermann Beck. This replica was removed from storage at the Natural History Museum and painted by the Connollys, then installed in a diorama with three dire wolf skeletons of about the same size so that visitors might visualize how the skeletons would relate to the animal in the flesh.

Possibly the oldest of the Rancho La Brea statues, William Otto's restoration of the pronghorn antelope, was also repainted by the Connollys. It too is displayed in the Page Museum where today visitors still gaze and wonder at its diminutive grace. Nearby stands the newest addition to the Hancock Park statuary: a life-size replica of La Brea Woman, the only human ever recovered from the asphalt deposits. The new sculpture, made of wax, was created by Entertainment Environments Incorporated; like Ball's male saber-toothed cat, it appears to alternate with a mounted skeleton every few moments. Entertainment Environments were also prepared to sculpt two crouching prehistoric "mountain lions," but the presence of Ball's fiber glass saber-toothed cats made these other wax statues unnecessary.

Although many statues were refurbished for the new museum, the sculptures of Hermann Beck and Joseph Roop were still in serious disrepair. It was with this in mind that, in 1984, laboratory volunteer Gerard Smith put the museum staff in touch with Green's Industrial Painting Incorporated. Donald Green, president of the corporation, had expressed an interest in repairing the old stone lions and was willing to donate both time and supplies toward this effort. Smith had also brought Case Power and Equipment, his own company, into the new endeavor. Darwin Thompson, president of Case Power, donated both manpower and equipment to wrestle the heavy beasts aboard a flatbed truck, which in turn had been loaned by Michael L. Barnett of Barnett Lowbed Trucking Company. Barnett delivered the sculptures to Green's. Once there, employee Juan Jacobs worked with care, respectful of Beck's original sculpting. Jacobs sandblasted the old paint and dirt from the replica, healed the gaping splits in the spines by injecting them with epoxy, and gave both animals a fresh coat of rubberized high-durability paint.



Ball's mammoth family and two saber-toothed cats. Shortly after this photo was taken in the late 1960s, the sabers and tails of the cats were sawed off and stolen, and the replicas were removed from view. Photograph by Larry Reynolds.

Ball's saber-toothed cats on display in the new George C. Page Museum of La Brea Discoveries. The male standing in the back of the family was once the female standing near the mammoths! Photograph by Dick Meier.

Mike Barnett then brought the lions back to Hancock Park, where a forklift loaned by Case Power was used to place them behind the heavy black fence ringing the Page Museum. They can be seen there today, crouching behind the fence like circus lions in a cage; but there the simile ends, for these massive lions do not growl or pace, but stand patiently while children ride their lean backs or play beside their massive paws.

Green was also interested in restoring the fighting saber-toothed cats. Beck's lions had simply needed patching; the fighting cats were missing the sabers and half of one animal's head and would need extensive resculpting before Green's people could begin. Senior Preparator Mary Odano and Audie Aragon, a laboratory volunteer at the Page Museum, began working to mend the saber-tooths. Aragon sculpted a new face in clay for the damaged statue, using the undamaged half of the head as a guide. He and Odano molded the reconstructed elements, then cast them in polyester resin directly onto the statue.

Again Case Power stepped in, along with Mike Barnett, to help take the heavy statues to Green's. George C. Page, the man whose donations made the Page Museum possible (and after whom the museum was named) also helped defray some of the cost of the restorations. At Green's, the fighting saber-toothed cats of Hermann Beck and Joseph L. Roop are being repaired and will soon return to Hancock Park.

By the end of this year, Hancock Park will hold nineteen pieces of statuary representing extinct forms of life found at Rancho La Brea. The styles of these creations range from the powerful to the poignant, from the sedate to the savage. Whether fiberglass, wax, or stone, the sculpted animals re-create an existence more than thirty thousand years lost. All these animals died, leaving only their bones behind. But in the eyes of the sculptor—and the visitor to Hancock Park—they live again.

Eric Scott received his B.A. in Anthropology from California State University, Northridge. More important to him are his years as a volunteer at the George C. Page Museum, where he has been active in all aspects of volunteer work since 1978. He has no sense of humor.

BOOK REVIEW

Maya: The Riddle and Rediscovery of a Lost Civilization (Third revised edition) by Charles Gallenkamp. Viking/Penguin, New York 1985. 235 pp. Cloth $22.95.

The Maya (Third edition) by Michael D. Coe. Thames and Hudson, New York 1984. 190 pp. Paper $9.95.

Ancient Maya Civilization by Norman Hammond. Rutgers University Press, New Brunswick, NJ 1982. 337 pp. Cloth $30, Paper $12.95.

The Ancient Maya (Fourth edition) by Sylvanus G. Morley and George W. Brainerd, revised by Robert J. Sharer. Stanford University Press, Stanford 1983. 708 pp. Cloth $28.50.

In the late 1960s and 1970s, while Maya archaeology was undergoing tremendous changes, the field had no introductory texts that were even remotely up to date. Fortunately this situation has been rectified in the last few years by the publication of a number of very good books on the Maya.

In this review I will examine four of the best books for the reader whose curiosity has been whetted by the exhibit Maya—Treasures of an Ancient Civilization (running at the Natural History Museum from September 7 to November 10). While each of these books is well written and up to date, each book varies in what it covers, the level of reader at which it is aimed, and how it approaches the subject.

Maya: The Riddle and Rediscovery of a Lost Civilization was written by Charles Gallenkamp, who was responsible for organizing Maya—Treasures of an Ancient Civilization.

Gallenkamp's book is the most popular and least technical of the four volumes reviewed. It is entertaining reading even for a more advanced student of the Maya, and the inclusion of small vignettes on important discoveries—such as the royal tomb of the Palenque ruler, Pacal, the fabulous Bonampak murals, and the treasures of the Cenote (well) of Sacrifice at Chichén Itzá—is a feature that some of the technical works should consider copying. Since this book is longer than Coe's and concentrates solely on the lowland Maya, it colors in the picture of the Maya more than the previous work. The one drawback is that there is no inexpensive paperback of this edition.

The Maya by Michael Coe is, at 190 pages, the shortest and, at $9.95, the least expensive of the books reviewed. The book is identical to Coe's 1980 edition except for the short epilogue, which covers the advances made since the last edition.

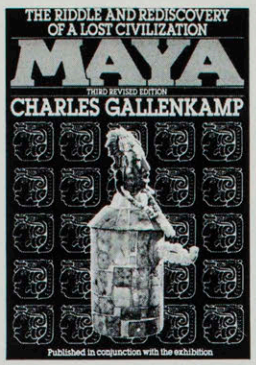
Most of the book is devoted to outlining the historical development of Maya culture from the earliest traces of man in the area to the Spanish Conquest. In doing this, Coe adopts the larger view of the Maya and covers both the highlands (the mountainous areas of Guatemala and Chiapas, Mexico, where most of the modern-day Maya live) and the lowlands (northern Guatemala, Belize, western Honduras, and parts of Chiapas, Tobasco, and all of the Yucatan Peninsula, which are generally associated with the term "Maya"). The chapters on Maya life are good but disappointingly short. The book's brevity does not allow the author adequate space to expound on his own specialties, Maya art and religion. Nevertheless, this book may be the best of the four for those who want a short overview of the highlights of Maya development. It has an added advantage in that it covers the highland area, which Gallenkamp's and Hammond's books do not.

Ancient Maya Civilization by Norman Hammond is the book I found most stimulating to read but about which I have the most reservations recommending to a general audience. Hammond is quite explicit in his preface as to what this book does and does not do. He focuses primarily on the lowland area, and the author admits that his book tends to emphasize sites in Belize where he has conducted extensive field work. The book is richer for the first-hand expertise this emphasis provides.

However, I would disagree with Hammond that this book is for a lay audience. Not only are his discussions of issues more detailed, technical, and theoretical than Gallenkamp's, but he often raises problems of archaeological method and interpretation that are not likely to be of interest to a nonacademic audience. Therefore, of the four books, this is the one I would least recommend for the reader lacking background or a strong interest in the Maya. Those with the interest and the background, however, should find this book as interesting as I did.

The last book, *The Ancient Maya* (written by Sylvanus Morley in 1946 and revised by George Brainerd in 1956), has been so thoroughly revised and rewritten by Robert Sharer, one of the most respected archaeologists in the field, that it should be considered an independent work.

The book is divided into four parts covering the cultural history, society, material culture, and intellectual culture of the Maya. An epilogue covers the Spanish Conquest. At 706 pages, *The Ancient Maya* is more than twice the length of any of the other books. In this space Sharer is able to cover both the highlands and the lowlands and to give all the varied aspects of Maya society their just due. This book is, without doubt, the best on the market. Even if one does not read it cover to cover, it will always serve as a quick reference if one wants to find out about Maya crafts, human sacrifice, or any number of other topics. It will certainly set the standard in the field for years to come. These books are all available at the museum bookstore.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MAYA
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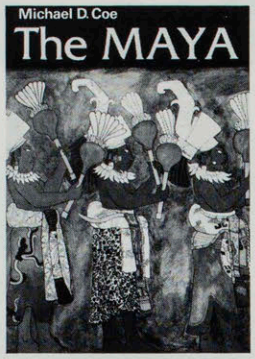

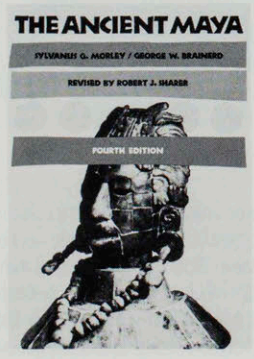

James Brady is Director of the Proyecto Arquelogico Naj Tunich and a doctoral candidate in Archaeology at UCLA.

(Continued from page 2)
on Christmas Island (1,200 miles south of Hawaii) working with him on a study of the boobies, frigatebirds, tropicbirds, and terns nesting there.

Volunteer field assistants rise early each day to work before it is too hot, take midday off, and work afternoons and some evenings. They have to be willing to grab birds and stuff them into bags to weigh them or pick up regurgitation samples for later analysis, among other things. There will be opportunities for swimming, snorkeling, bone fishing, and wandering through a native village. Trips are planned for mid-February and mid-July 1986. Expenses as a field assistant are tax deductible and are approximately $2,100 for one week or $2,800 for two weeks, including air fare from Los Angeles. If you are interested, write Dr. Ralph Schreiber, Natural History Museum, 900 Exposition Boulevard, Los Angeles, CA 90007, or call 213/744-3366.

STERLING KEELEY

Dr. Sterling Keeley, a Botany Research Associate since 1978, will begin a sabbatical at the museum this September that will continue through January 1986. Dr. Keeley, an Associate Professor of Biology at Whittier College, was awarded two National Science Foundation grants through the museum to work on the systematics of *Vernonia* (a genus of the aster family) in Central and South America. She will be finishing up six years of grant and museum support on this project during this time.

BOTANY HALL GRANT

For several years the Botany curators have been working with the National Park Service to develop a concept for a hall devoted to Mediterranean-type ecosystems, with a specific focus on California chaparral and the Santa Monica Mountains. Last May the Natural History Museum was awarded a grant from the Santa Monica Mountains Conservancy, a state agency, for $250,000 to help realize this exhibit. A 1987 opening of this permanent hall, which will feature a circular diorama showing the life cycle of a chaparral community from a recent burn to a fifteen-year-old mature stand, is planned. Dr. Don Reynolds, Curator of Botany, will serve as Project Director. Robert Gustafson, Botany Collections Manager, and Jerry Campbell, Museum Designer, will be Project Coordinators for the Botany Section and Exhibits Services. Dr. Sterling Keeley will be the scientific advisor. She will also coordinate an international conference on California chaparral to be held in conjunction with the exhibit's opening. Dr. Keeley and her husband, Research Associate Dr. Jon Keeley, will coauthor a book on chaparral.

NEW BENEFIT FOR MEMBERS

You'll note that this issue of *Terra* has no insert stapled between pages 16 and 17, interrupting "Rare and Endangered Southern California Plants." That's because, beginning in October, the insert will have a life of its own. Simply named *Calendar*, it will be sent to museum members every two months to fill you in on all of the latest special exhibits, openings, classes, lectures, films, and tours offered by two great museums—the Natural History Museum of Los Angeles County and the George C. Page Museum of La Brea Discoveries. To tide you over until then (if all the activities connected with Maya—Treasures of an Ancient Civilization haven't kept you busy) here's an announcement of a basketry workshop to be held in September.

CRAFT WORKSHOP

Natural Basketry for Beginners

Create a functional or sculptural basket using plaiting, twining, and weaving techniques and native California plants. All materials will be provided, but you may bring dried flowers to add special decorative motifs.
Judy Mulford, Instructor
Saturday, September 21, 1985
9 a.m. to 4 p.m.
$20 members, $25 nonmembers
Limit ten people

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MAYA

TREASURES OF AN ANCIENT CIVILIZATION

MAYA EXHIBITION CATALOG AVAILABLE IN MUSEUM BOOKSTORE

The catalog that accompanies the special Maya exhibition is exceptional. It features six essays by renowned scholars, as well as detailed descriptions and beautiful photographs (many in color) of every piece in the exhibition.

Reserve your copy today. Reading the catalog before your visit to the museum will greatly enhance your appreciation and enjoyment of this very special exhibition. To place your order, call the Natural History Museum Bookstore at 213/744-3434, or mail the handy order blank provided below.

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